REMARKS/ARGUMENTS

35 USC 103(a)

Claims 1, 7, and 16-17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ye (US 20060146937 A1), in view of Turaga (US 7023923 B2). The applicant respectfully disagrees for the reasons discussed below.

The 35 U.S.C. §103(a) states the following:

> "(a) A patent may not be obtained though the invention is not identically disclosed or described as set for the in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be nagatived by the manner in which the invention was made."

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

The Cited References, Combined or Individually, Do Not Disclose Every Limitation

The amended claim 1 recites the following limitations:

> "A method for interframe wavelet video coding comprising:
>
> an encoder for inputting video frames, comprising a Motion Compensated Temporal Filtering (MCTF) analyzer, a spatial analyzer connected to said MCTF analyzer, a wavelet coefficients entropy encoder connected to said spatial analyzer, a packetizer connected to said wavelet coefficients entropy encoder, a motion estimator embedded or connected to said MCTF analyzer, and a Motion Information (MI) encoder connected to said motion estimator;
>
> a decoder for outputting video frames, comprising a de-packetizer, a wavelet coefficients entropy decoder connected to said de-packetizer, a spatial synthesizer connected to said wavelet coefficients entropy decoder, an MCTF synthesizer connected to said spatial synthesizer,

> and an MI decoder connected to said de-packetizer and said MCTF synthesizer; and
>
> a puller connected to said encoder and said decoder, wherein said method is to partition an MI for scalability and to transfer a partition of said MI to a terminal to achieve said scalability."

Ye fails to teach or suggest the technical features recited in claim 1 of the present application. Accordingly, the currently amended claim 1 is patentable over the cited references. Thus, dependent claims 7 and 16-17 depending thereupon are also patentable.

Ye discloses the base layer having the lowest resolution frequency band (paragraph [0068] of Ye) and that the remaining frequency bands are treated as enhancement layers. Also, the MCTF generates a motion vector for its respective frequency band (paragraph [0069] of Ye). Furthermore, all the enhancement layers are decoded only if possible (paragraph [0077] of Ye), indicating that a picture can be reconstructed when only some of the bands can be decoded. Each frequency band, and its corresponding motion vector, represents a separate layer as the Examiner mentioned. However, the applicant respectfully disagrees that Ye provides a means for scaling the motion vectors <u>as a self-contained, independent layered bitstream</u>.

In this case, Ye discloses that the output bitstream (Fig 2, element 220) is generated by the multiplexer (Fig 2, element 212), and the multiplexer receives the compressed video bands and compressed motion vectors and multiplexes them into a bitstream (paragraph [0070] of Ye). As the Examiner mentioned, each frequency band and its corresponding motion vectors together represents a separate layer in Ye's method. Since the output bitstream contains a certain number of layers, it is obvious that <u>the number of the compressed frequency bands</u> and <u>the number of the corresponding compressed motion vectors in the output bitstream</u> (Fig2, element 220,) ARE THE SAME. In Ye's method, <u>the layered structure of motion information is confined to the frequency band partition of the image texture information</u>.

The coding scheme in the current application, <u>the MI encoder is to do partitioned coding to the MI according to three precisions of spatial precision, temporal precision, or numerical precision</u>. <u>The packetizer is to bundle the compressed video content bitstream and a compressed</u>

MI into a single compound compressed bitstream. Since the MI can be partitioned and coded to different precisions, the number of the compressed frequency bands and the number of the compressed motion vectors in the output bitstream of the packetizer CAN BE DIFFERENT. More importantly about the coding scheme in this application, each frequency band may have one or more layers of MI. The partition of MI is NOT LIMITED by the frequency bands. The compressed frequency bands of image texture have their own bitstream structure of base and enhancement layers; independently, the partitioned and compressed MI has its own bitstream structure of base and enhancement layers. Therefore, the puller can partition frequency bands and MI independently.

Each motion vector set is bounded to its corresponding frequency band in Ye's coding scheme. (There is a technical structure reason for this limitation, which is the main idea of the Ye's patent.) Therefore, the motion vectors of one frequency band CANNOT be further partitioned in an independent manner. The motion information scalability in Ye's coding scheme is confined by the frequency band partition because the motion vector partition depends on the frequency band partition. On the other hand for the coding scheme of the present application, the MI and frequency bands (of image texture) are encoded independently and these two parts have their own bitstream layer structures separately. Therefore, it provides the scalable capabilities for both frequency bands and MI independently.

In Turaga's coding scheme, the entropy coding technique for wavelet coefficients is also applied to the motion vectors (column 5, lines 23-35 of Turaga). In addition, both motion vector and wavelet coefficient are processed by the same entropy coding block (Fig 2, element 14). IN CONTRAST, in the coding scheme in the current application (Fig 1), there are different paths for the wavelet coefficients and the motion information and also two separate entropy coding blocks for them (elements 13 and 16), indicating that different entropy coding techniques are applied to the wavelet coefficients and the motion vectors separately. As discussed above, the wavelet coefficients (image texture information) and the MI are processed independently in the scheme of the present application. More importantly, the entropy coding unit in the coding scheme must ensure the scalability property of the coded MI bitstream. This means, it is partially and progressively decodable. The entropy coding technique of the present application is different

from the one cited in Turaga. The combination of the entropy encoding and entropy decoding of Turaga with the coding scheme of Ye does not teach the claimed features of the present application.

Regarding claims 7 and 16-17, Ye discloses that the base layer is the lowest resolution frequency band (paragraph [0068] of Ye) and that the remaining frequency bands are treated as enhancement layers; also, Ye mentions that the MCTF generates a motion vector for its respective frequency band (paragraph [0069] of Ye). Besides, all the enhancement layers are decoded only if possible (paragraph [0077] of Ye), indicating that a picture can be reconstructed when only some of the bands can be decoded. Each frequency band and its corresponding motion vector represent a separate layer as the Examiner mentioned. However, the applicant respectfully disagrees that Ye teaches or suggests that partitioned motion information and texture signals can be successfully decoded.

In Ye, the output bitstream (Fig 2, element 220) is generated by the multiplexer (Fig 2, element 212), and the multiplexer receives the compressed video bands and compressed motion vectors and multiplexes them into a bitstream (paragraph [0070] of Ye). As the Examiner mentioned, each frequency band and its corresponding motion vector represents a separate layer in Ye's method. Therefore, each motion vector is bounded to its corresponding frequency band in Ye's coding scheme, so motion vector of one frequency band cannot be further partitioned. Besides, Ye discloses that the base layer is the lowest resolution frequency band (paragraph [0068] of Ye) and that the remaining frequency bands are treated as enhancement layers, indicating that layer structure only exists in frequency band data but not in motion information (MI) of Ye's coding scheme; since the motion information does not has layer structure, there is no partitioned motion information of any one frequency band in Ye's coding scheme. Hence, Ye's coding scheme can only successfully decode in the situation of partitioned frequency bands with all of their corresponding motion information, but it fails to decode in the situation of partitioned frequency bands with their corresponding partitioned motion information.

Without conceding the propriety of the asserted combination, however, the applicant respectfully submits that the asserted combinations do not disclose at least the aforementioned

features of claim 1. Likewise, novelty and nonobviousness of claim 1 should make the rejection under of 35 U.S.C 103(a) with respect to claims 7 and 16-17 moot.

Therefore, claim 1 is sufficient to render the present invention patentable over the cited references. Claims 7 and 16-17 are dependent from the amended claims, whereby should be patentable over the cited references for the same reasons stated above.

Accordingly, the applicant respectfully submits that the amendments to the claims traverse this rejection. Favorable reconsideration and withdrawal of the rejection under 35 U.S.C. § 103 are respectfully requested.

Patent Examiners Should Interpret Claims in Light of Specification

The court has recently indicated that the PTO should apply the principles of *Phillips v. AWH* during prosecution — rather than the PTO's current practice of giving claims their "broadest reasonable interpretation." *In re Johnston* (Fed. Cir. 2006). The Patent Office may use a dictionary in defining the patent applicant's claim terms only when the patent specification did not otherwise provide any interpretation.

Office has the Burden of Proof

The applicant respectfully notes that the Office has the initial burden of setting forth a prima facie case of obviousness, and to do that the Office must identify **specific** teachings, suggestions or motivations in the prior art for making the claimed combination. Merely pointing out that various elements by themselves are known in the prior art is insufficient. Nor is it sufficient to merely state that combination of the missing elements is obvious because their combination would be beneficial. If that were the standard nothing would ever be patentable.

Request For Allowance

Claims 1, 7, and 16-17 are pending in this application. The applicant expresses his gratitude to the Examiner for the courtesies extended to the applicant's undersigned representative throughout prosecution of this application. In view of the foregoing, the applicant respectfully submits that the independent claims patentably define the present invention over the citations of record. Further, the dependent claims should also be allowable for the same reasons

as their respective base claims and further due to the additional features that they recite. Separate and individual consideration of the dependent claims is respectfully requested. Favorable consideration is respectfully requested.

Respectfully submitted,
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